

Case 3689***Cognettia* Nielsen & Christensen, 1959 (Annelida, Oligochaeta, ENCHYTRAEIDAE): proposed precedence over *Euenchytraeus* Bretscher, 1906 and *Chamaedrillus* Friend, 1913**

Rüdiger M. Schmelz

ECT Oekotoxikologie GmbH, Böttgerstr. 2–14, 65439 Flörsheim, Germany

University of A Coruña, Science Faculty, Department of Animal Biology, Plant Biology, and Ecology, Rua da Fraga 10, 15008 A Coruña, Spain

(e-mail: rmschmelz@gmail.com)

Rut Collado

University of A Coruña, Science Faculty, Department of Animal Biology, Plant Biology, and Ecology, Rua da Fraga 10, 15008 A Coruña, Spain

(e-mail: rutco@udc.es)

Jörg Römbke

ECT Oekotoxikologie GmbH, Böttgerstr. 2–14, 65439 Flörsheim, Germany

(e-mail: j-roembke@ect.de)

Abstract. The purpose of this application, under Articles 23.2 and 23.9.3 of the Code, is to conserve the usage of the genus-group name *Cognettia* Nielsen & Christensen, 1959 (ENCHYTRAEIDAE, Oligochaeta, Annelida) for a genus of annelid worms (type species *Pachydrilus sphagnetorum* Vejdovský, 1878 ('1877')). *Cognettia*, a name for a Holarctic genus of terrestrial and semi-aquatic annelid worms, is threatened by two subjective senior synonyms, *Euenchytraeus* Bretscher, 1906 and *Chamaedrillus* Friend, 1913. If these two names are considered synonyms, *Euenchytraeus* will replace *Cognettia*; if they are considered to represent two different genera, *Chamaedrillus* will replace *Cognettia*. In 2015 Martinsson et al. adopted the latter course, replacing *Cognettia* by *Chamaedrillus*, and allocated its species between both *Euenchytraeus* and *Chamaedrillus*. *Cognettia* is a widely used name and is well-known in the fields of soil biology, ecology, and ecotoxicology, and we propose it be given precedence over *Chamaedrillus* and *Euenchytraeus*, which had not been used as valid for almost a century.

Keywords. Nomenclature; taxonomy; Annelida; Clitellata; Oligochaeta; ENCHYTRAEIDAE; *Cognettia*; *Chamaedrillus*; *Euenchytraeus*; *Cognettia sphagnetorum*; enchytraeid worms; Europe.

1. Vejdovský (1878, p. 304) erected a new species of *Pachydrilus* Claparède, 1861 (ENCHYTRAEIDAE, Oligochaeta, Annelida), *P. sphagnetorum*, based on specimens found in sphagnum bogs in Central Europe. The very brief diagnosis was followed by a description with illustrations in Vejdovský (1879).

2. Michaelsen (1889, p. 28) erected the genus *Marionia* and transferred *P. sphagnetorum* to this genus, together with six other previously described species-group taxa. The generic name was later replaced by *Marionina* (Michaelsen in Pfeffer 1890, p. 511) because of the homonymy with *Marionia* Vayssière, 1877 (Mollusca) (Michaelsen, 1900, p. 73). *Marionina* remained without a type species until Brinkhurst (1971, p. 662) designated *Pachydrilus georgianus* Michaelsen, 1888a as type species.

3. Bretscher (1906, p. 673) erected the genus *Euenchytraeus* for a new species of ENCHYTRAEIDAE, collected from soils in the Swiss Alps, that had a character hitherto unknown in the family – nephridia in the head region. The species was named *Euenchytraeus bisetosus* and described in the same paper (Bretscher, 1906). The genus remained monotypic. The genus-group name was used as valid only by Sterling (1908) and Piguet & Bretscher (1913). The latter contribution gave a description of the sexual organs – Bretscher's original account was based on juvenile specimens.

4. Friend (1913a, p. 260) erected the genus *Chamaedrillus* for a species of ENCHYTRAEIDAE collected from soils in England, which he named *Chamaedrillus chlorophilus*. Later, Friend (1919) noted the close similarity of this species with *Marionina sphagnetorum* and transferred *M. sphagnetorum* to *Chamaedrillus*, together with its subspecies *M. s. glandulosus* (Michaelsen, 1888b). The genus-group name *Chamaedrillus* was used as valid only by the author himself in subsequent publications (Friend, 1913b, 1914, 1919, 1922).

5. The genera *Euenchytraeus* and *Chamaedrillus* were soon rejected in several works. Welch (1920, p. 46), in a literature-based revision of the genera of ENCHYTRAEIDAE, dealt with both genera under the heading 'genera dubia': he considered *Chamaedrillus* to be indistinguishable from *Marionina*, and *Euenchytraeus* impossible to evaluate due to the lack of information on the sexual organ, in apparent ignorance of Piguet & Bretscher (1913). Černosvitov (1937a, p. 205), after reinvestigation of voucher material of *Chamaedrillus chlorophilus* from Friend's collection, considered *Chamaedrillus chlorophilus* to be synonymous with *Marionina sphagnetorum* at the species and genus levels, confirming a previous conjecture by Delphy (1921). Later the same year, in a comprehensive literature-based revision of species and genera of ENCHYTRAEIDAE, Černosvitov (1937b, p. 277) placed *Euenchytraeus* in synonymy with *Marionina* and considered the type species of *Euenchytraeus* – classified as '*Pachydrilus (Marionina) bisetosus* (Bretscher)' – a 'species dubia' (Černosvitov, 1937b, p. 293). Thereafter, the generic names *Chamaedrillus* and *Euenchytraeus* were no longer considered or discussed in the literature until very recently (Schmelz & Collado, 2010; Martinsson et al., 2015a).

6. Nielsen & Christensen (1959, p. 41), in their monograph and revision of European ENCHYTRAEIDAE, erected *Cognettia* with the type species '*C. sphagnetorum* (Vejd.)', that is, *Pachydrilus sphagnetorum* Vejdovský, 1878. The subjective synonymy of *Cognettia* with *Chamaedrillus* went unnoticed. Four other nominal species of *Marionina* were also included in *Cognettia*. The nomenclatural and taxonomic framework established in Nielsen and Christensen (1959) was widely accepted by taxonomists and non-taxonomists; their 1959 monograph, followed by two supplements (Nielsen & Christensen, 1961, 1963) launched a new era of research with enchytraeids, particularly in the field of soil ecology.

7. Enchytraeid specimens with head nephridia – discovered in soils in Siberia (Piper et al., 1982; Christensen & Dózsa-Farkas, 1999) and in soils in the Austrian Alps (Bauer, 1993) – were described as *Cognettia piperi* Christensen & Dózsa-Farkas, 1999 and *Cognettia clarae* Bauer, 1993, respectively. Their apparent similarity with *Euenchytraeus bisetosus* Bretscher, 1906 and hence the concomitant subjective synonymy of *Cognettia* with *Euenchytraeus*, went unnoticed.

8. Schmelz & Collado (2010, p. 80), in a guide to the identification of European non-marine enchytraeid species, recognized that *Cognettia* has two subjective senior synonyms, *Euenchytraeus* and *Chamaedrillus*, and remarked that a preservation of *Cognettia* would require an application to the International Commission on Zoological Nomenclature (ICZN). They maintained the name *Cognettia* because of its common use and wide acceptance: until 2010, the genus-group name *Cognettia* had been used as valid in at least 350 scientific publications, most of them of non-taxonomic scope and content (see list of additional references) whereas *Euenchytraeus* and *Chamaedrillus* had not been used since they were judged invalid in 1937 and 1920, respectively.

9. Martinsson et al. (2015a) re-established *Chamaedrillus* and *Euenchytraeus* and distributed the species previously included in *Cognettia* amongst these two genera. The two species with head nephridia (see paragraph 7 above) were assigned to *Euenchytraeus*, and its type species *Euenchytraeus bisetosus* (previously a ‘species dubia’, see para. 5 above) was restored. The rest – *Cognettia sphagnetorum* included – were included in *Chamaedrillus*. The species name *chlorophilus* was revalidated based on combined morphological and molecular studies and the re-investigation of voucher specimens, which the authors considered to be syntypes of *Chamaedrillus chlorophilus* (Martinsson & Erséus, 2014; Martinsson et al., 2015a); *chlorophilus* and *sphagnetorum* were hence no longer considered as synonyms (see paragraph 5 above). *Cognettia sphagnetorum* auct. was split into four species, two of them new to science, and a neotype for the newly limited concept of *Ch. sphagnetorum* was designated (Martinsson et al., 2015a). *Chamaedrillus* sensu Martinsson et al. (2015a, 2015b) comprises 17 nominal species. In contrast, if *Chamaedrillus* and *Euenchytraeus* are considered synonyms, the valid name of this genus will be *Euenchytraeus*, with priority over *Chamaedrillus* and *Cognettia*.

10. *Cognettia* is a long-accepted genus-group name, and is well-known in different branches of biology and environmental research. This Holarctic genus comprises c. 18 terrestrial or semi-aquatic species of 2.5–25 mm body length that live in the uppermost soil strata. We have counted more than 400 published papers (1959 to the present day) that cite the generic name *Cognettia* as valid (a list of these works is held by the Commission Secretariat). This list would be lengthened by the inclusion of reports and scientific publications in languages other than English or German. The majority of field studies with species lists of ENCHYTRAEIDAE include the name *Cognettia*. Noteworthy is the large body of soil ecological research papers that deal with one species, *Cognettia sphagnetorum*. This mainly European species is very common and abundant in soils that are nutrient poor, yet rich in organic matter, such as boreal forests, temperate heathlands, and moorlands. With densities up to 300,000 ind./m² (Peachey, 1963), *C. sphagnetorum* influences ecosystem processes such as decomposition and nutrient cycling (e.g. Maraldo & Holmstrup, 2009 and references therein). Its pivotal role in these habitats is considered similar to that of ‘ecosystem

engineers' (Lavelle et al., 1997; Jänsch et al., 2005) – species that directly or indirectly affect the availability of resources to other organisms through modifications of the physical environment. Diverse aspects of the biology of *C. sphagnetorum* have been investigated, usually related to its role in the soil ecosystem, for example: sensitivity towards contaminants (Salminen & Haimi, 2001; Römbke & Beck, 2012), drought (Holmstrup et al., 2012), forest clear-cutting (Uhía & Briones, 2002), effects on plant growth (Laakso & Setälä, 1999), fungal growth (Hedlund & Augustsson, 1995), soil carbon and nitrogen dynamics (Briones et al., 2007; Carrera et al., 2011; Maraldo et al., 2011), and interactions with other compartments of the soil food web such as lumbricids, microarthropods and nematodes (Huhta et al., 1998; Huhta & Viberg, 1999). Other species of *Cognettia* are also common but have not been well-studied, e.g. the Holarctic *Cognettia glandulosa* (Michaelsen, 1888b), recently revised by Martinsson et al. (2015b, therein as *Chamaedrillus glandulosus*), which is abundant in some North American broadleaf-deciduous forests (Nurminen, 1973) and common in aquatic or semi-aquatic habitats in Europe. The genus name is also known to scientists and non-scientists in the field of soil ecology and forestry whose work is not focused on enchytraeids. Due to the importance of *C. sphagnetorum*, the genus-group name *Cognettia* is present in most of the recent soil biology textbooks (e.g. Lavelle & Spain, 2001; Coleman et al., 2004; Bardgett, 2005). In contrast, the names *Euenchytraeus* and *Chamaedrillus* have rarely been used after their erection (see paragraphs 3 and 4, above), and they were not used as valid after 1937 and 1920, respectively, until Schmelz & Collado (2010) drew attention to their priority over *Cognettia*.

11. Adherence to the Principle of Priority (Article 23.1 of the Code) in the case of *Cognettia* will create instability and is in opposition to its intent – to promote stability in the scientific names of animals (Preamble and Article 23.2 of the Code). Especially in view of the wide use of the name in non-taxonomic biological disciplines, *Cognettia* and its valid senior synonym would have to be used in parallel for a long time to avoid confusion. Our application to conserve the long-accepted name *Cognettia* in its accustomed meaning includes both senior synonyms, *Euenchytraeus* and *Chamaedrillus* – because either of them can be used as valid, depending on the taxonomic opinion (see paragraph 9 above).

12. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to rule that the genus-group name *Cognettia* Nielsen & Christensen, 1959 is to be given precedence over:
 - (a) *Euenchytraeus* Bretscher, 1906, whenever they are considered to be synonyms;
 - (b) *Chamaedrillus* Friend, 1913, whenever they are considered to be synonyms;
- (2) to place on the Official List of Generic Names in Zoology the following names:
 - (a) *Cognettia* Nielsen & Christensen, 1959 (gender: feminine), type species by original designation *Pachydrillus sphagnetorum* Vejdovský, 1878 with the two endorsements that:
 - (i) it is to be given precedence over *Euenchytraeus* Bretscher, 1906 whenever their type species are placed in the same genus-group taxon;
 - (ii) it is to be given precedence over *Chamaedrillus* Friend, 1913, whenever their type species are placed in the same genus-group taxon;

- (b) *Euenchytraeus* Bretscher, 1906 (gender: masculine), type species by monotypy *Euenchytraeus bisetosus* Bretscher, 1906, with the endorsement that it is not to be given precedence over *Cognettia* Nielsen & Christensen, 1959, whenever their type species are placed in the same genus-group taxon;
 - (c) *Chamaedrillus* Friend, 1913 (gender: masculine), type species by monotypy *Chamaedrillus chlorophilus* Friend, 1913, with the endorsement that it is not to be given precedence over *Cognettia* Nielsen & Christensen, 1959, whenever their type species are placed in the same genus-group taxon;
- (3) to place on the Official List of Specific Names in Zoology the following names:
- (a) *sphagnetorum* Vejdovský, 1878, as published in the binomen *Pachydrilus sphagnetorum* (specific name of the type species of *Cognettia* Nielsen & Christensen, 1959);
 - (b) *chlorophilus* Friend, 1913, as published in the binomen *Chamaedrillus chlorophilus* (specific name of the type species of *Chamaedrillus* Friend, 1913);
 - (c) *bisetosus* Bretscher, 1906, as published in the binomen *Euenchytraeus bisetosus* (specific name of the type species of *Euenchytraeus* Bretscher, 1906).

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